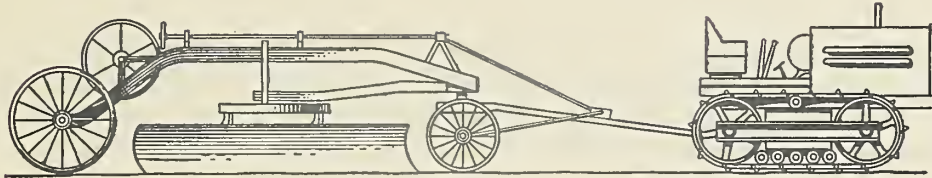


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AUG 13 1938
U. S. Department of Agriculture

CONSTRUCTION



HINTS

UNITED STATES DEPARTMENT OF AGRICULTURE, FOREST SERVICE
WASHINGTON, D. C.

Vol. 4

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No. 15

BLASTING

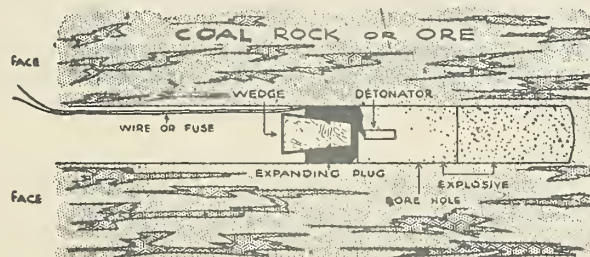
There are two new types of blasting plugs now listed in the General Supply Schedule, for use in place of stemming.

These are shown under Class 4, Supplement No. 1, as follows:

Tps. No. 23002 Heitzman Safety Blasting Plug Corp.,
4 West Independence Street, Shamokin, Pa.

Tps. No. 23004 Safety Stemming Plug Sales Company,
1726 Koppers Building, Pittsburgh, Pa.

Instructions for the use of these plugs can be obtained from the above manufacturers. However, no change in your present blasting practice should be made without the approval of your Regional Office.



Heitzman Rubber Plug and Wedge

(over)

HYDRAULIC PUMP

Region 6 recommends the pump shown in the accompanying illustrations. Mr. T. P. Flynn, Regional Equipment Engineer, has the following to say about it.

"The development of this new pump began about one year ago and we have had three of the pumps in steady use on '55' Cletrac bulldozer units for nearly nine months. Their performance to date shows them to be superior in many respect to other oil hydraulic pumps we have been using.

Len Edwards of Longview, Washington, is the originator of the reliner idea for hydraulic pumps, and he has pioneered and used this feature in water pumps for many years now. Since geared types of water pumps are the same in principle as oil hydraulic pumps, he has now applied the liner idea very successfully to his oil hydraulic pumps for bulldozer use. This feature alone is a genuine outstanding improvement over all other oil hydraulic pumps now on the market.

Following are a few outstanding feature of the Edwards pump unit that are worthy of consideration.

1. The pump liner is a cage which contains pump gears and their bearings, and these gears and bearings are the greatest source of trouble in cost and replacement on any oil hydraulic pump. All wear and damage, if any, to gears and bearings, takes place within the liner cage, thus eliminating the possibility of any damage to the main pump housing casting.

When replacements of gears or bearings are necessary on the Edwards pump, the face plate of the pump is removed, the liner cages are slipped out endwise and a new set installed in their place. This change can be made within one half-hour, after which the machine is ready to go again.

2. The complete replacement liner with gears and bearings included can be furnished for approximately \$30.00 and the labor for installation is practically negligible. By comparison, whenever bearings and gears have to be replaced in the present conventional pump, the cost for labor and parts usually runs well towards \$100.00 and very frequently amounts to more than this. There is evidently quite a large saving to be made by the use of the reliner type of pump, not only in parts and labor for the replacement, but the machine is tied up a much shorter time.

3. The Edwards control valve is built on top of and right in with the pump, which reduces the total weight and size of the complete unit to the minimum.

4. The Edwards pump has another outstanding advantage over all other bulldozer pumps in that it is designed and constructed to permit it to be converted quickly to a water pump for fire or other use. The liner feature, first of all, makes this quick conversion possible in that the user or the owner can carry an extra set of liners with special water pump gears and their bearings all set up, and when it is necessary, convert from oil to water operation. The liner containing the oil gears is slipped out and the water pump liner with gears installed in its place. This replacement does not require an expert mechanic at all, but can be made by the average layman or bulldozer operator in a very short time.

Edwards provides two extra ports on the main pump housing, one for water intake and one for discharge, to which the standard fire hose can be coupled.

We have thoroughly tested and used this convertible feature here and found that when the unit is used as a water pump, it will deliver between eighty and one hundred gallons per minute, depending on the motor speed. This convertible feature would make every bulldozer pump a dual purpose unit which could be converted and used for water pumping on fires wherever a bulldozer thus equipped might be working.

The total price of the new Edwards pump complete is between \$250 and \$260. In addition to this, it is necessary to rearrange the hydraulic hose and coupling set-up to fit the Edwards unit. However, in most cases, the old hose can be reclaimed and cut to the proper length and hooked up with the Edwards pump.

The principal purpose in my recommending this new pump development is that the Government has probably a few thousand bulldozer pumps in use. Some of them are good, some are fair, and others are just terrible, because they are built cheaply and we find continued failures requiring replacements nearly all the time. Even though it is our intention, with our near gearlift bulldozer development, to eliminate hydraulic-operated bulldozer ultimately, nevertheless this will take considerable time. In the meantime, a large amount of money will have to be spent repairing or replacing oil hydraulic pumps and if this Edwards development can continue to prove as durable and efficient as it has for us, I feel there is every reason we should take advantage of these improvements with the possible savings that may be made.

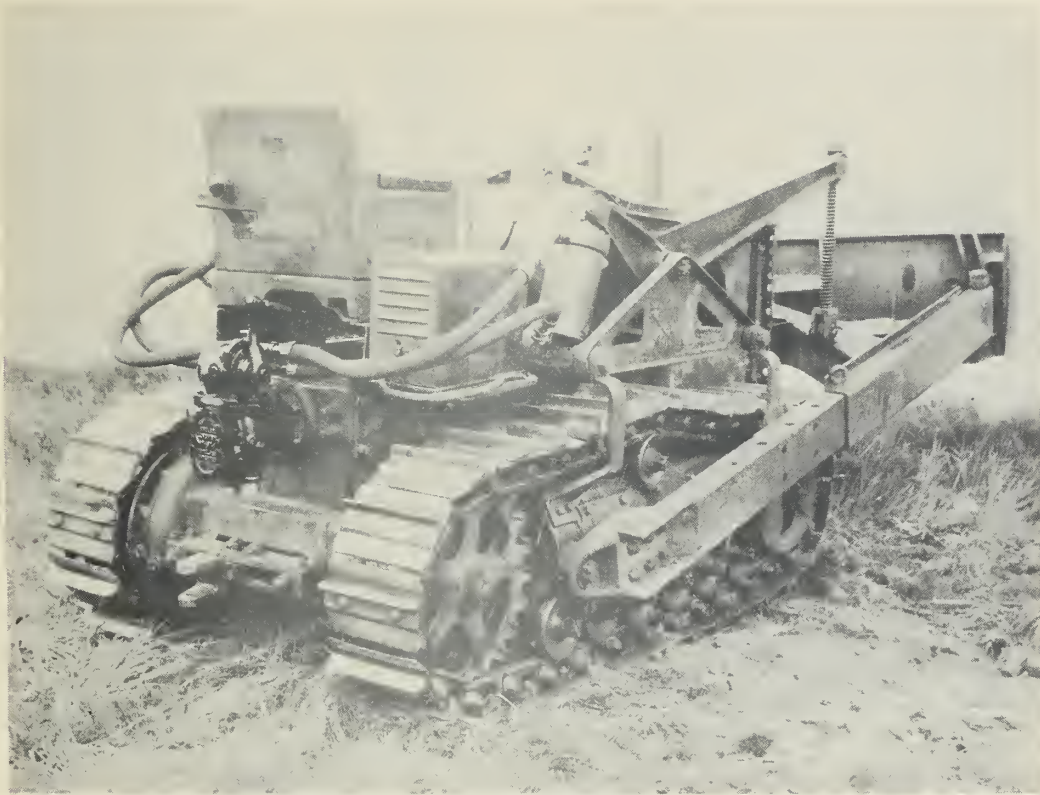
I might mention here that because of the large amount of expense and pump troubles that we have had in the past, the Forest Service engineering department here was instrumental in pointing out to Mr. Edwards the possibilities of developing an improved pump. We contributed quite a large

amount of information and background, and occasionally a few mechanical ideas to Mr. Edwards, which assistance, no doubt, helped to bring this development to its present stage. For this reason, we are naturally interested in the success of this new pump unit.

It is my suggestion that if other Regions are interested, they follow somewhat the same plan we did; that is, wherever there are some expensive replacements to make, while the bulldozers are being repaired, they should secure one or two of these Edwards unit and get them into use and on trial. In this way, their value and features can be appreciated.

To date, the Edwards company has designed and constructed pumps for bulldozer units for any make of tractor up to the RD7 Caterpillar. Anyone wishing to secure one of the Edwards pumps or any further information or descriptive data should write direct to the Edwards Manufacturing Company, 1317 California Way, Longview, Washington.

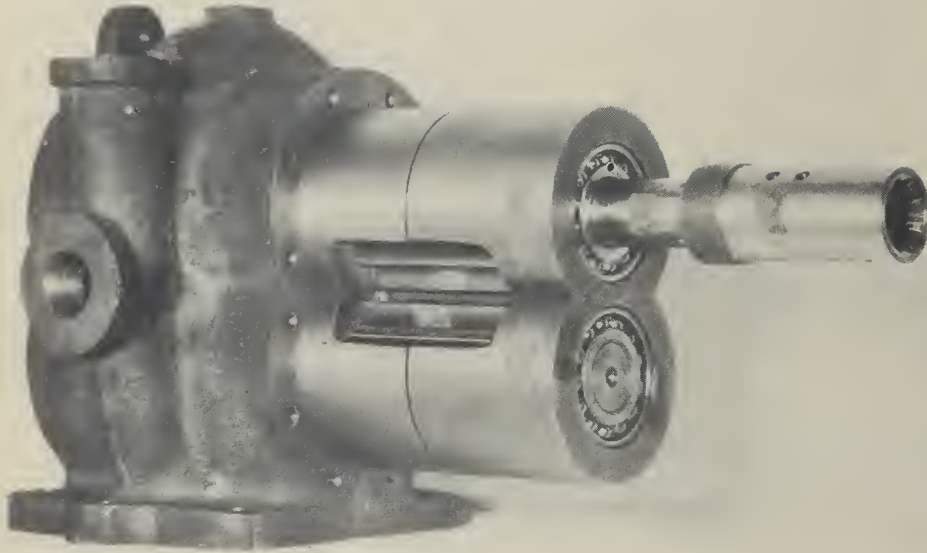
"We made our installations on '55' Cletracs with Wood-Isaacson bulldozers."



MODEL (T-50)

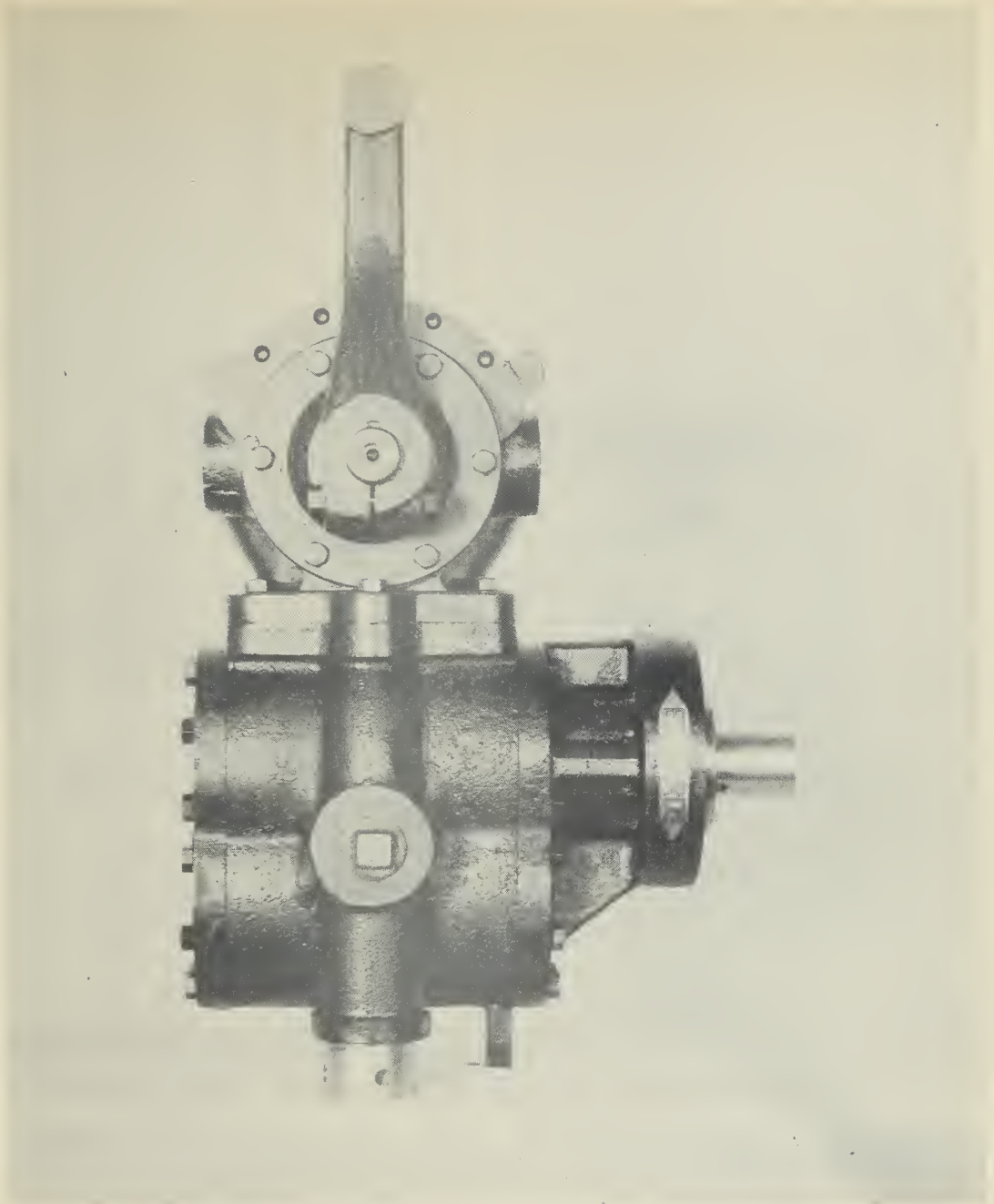
Mounted on Cletrac Tractor.

This shows the simplicity of the installations. Only (4) hose connections required to operate the two hydraulic jacks. All other pipes are eliminated due to the built-in relief valve, suction, discharge and return passages. This construction is made possible by using the patented pump liners, which protect the pump housings from injury or wear.



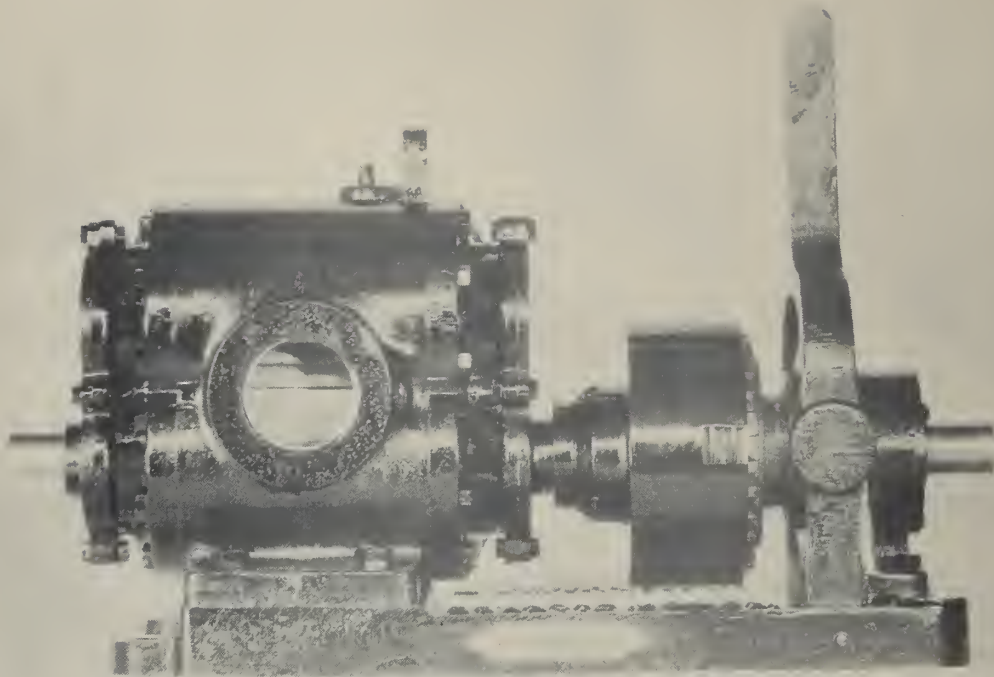
MODEL (T-50)

This shows the main pump housing, with pump liners, rotors, ball bearings, shafts and spline connections. It can be readily seen that the pump housings are protected by the patented pump liners. This also shows the simplicity of replacing the pump liners and other wearing parts. This assembly can be removed from either the front or rear end of pump housing. This makes it possible to fully recondition the pump without removing it from its mounting or disturbing any of the connections.



MODEL T-50

This is the standard hydraulic pump and valve. The spline driving connection, mounting for adapter plate, relief valve and valve control can be plainly seen. On some installations, a rack and pinion valve control is used.



MODEL (100)

This model is used for oil or water. It can be driven from the front end of the motor or from the power take-off. It is equipped with a multiple disc clutch, stainless steel shafts, ball bearings and is all aluminum construction. This model is used on oil transfer trucks and rural fire trucks. The pump is equipped with a special set of rotors and liners when being used for fire control work.

Capacity 100 G.P.M. at 1600 R.P.M.

Pressures up to 250 lbs.

Normal speed 1600 R.P.M.

Speed range from 500 R.P.M. to 2400 R.P.M.